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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Ian Alastair Kirk

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EXAMINER

FULLER, ROBERT EDWARD

ART UNIT

PAPER NUMBER

3676

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,157	Applicant(s) KIRK ET AL.	
	Examiner ROBERT E. FULLER	Art Unit 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input checked="" type="checkbox"/> Other: <u>Exhibit A</u> . |

DETAILED ACTION

Claim Objections

1. Claims 2-34 are objected to because of the following informalities: The word --The-- should be inserted as the first word of each of these claims. Appropriate correction is required.
2. Claims 37-42 are objected to because of the following informalities: The first word of these claims should be changed from "A" to --The--. Appropriate correction is required.
3. Claim 6 is objected to because of the following informalities: It seems that "a sleeve" should be changed to --the sleeve-- to correct antecedent basis issues. Appropriate correction is required.
4. Claim 30 is objected to because of the following informalities: There is a lack of antecedent basis for "the offset of the blades." Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-7, 10, 13-15, 20-22, 24, 26-29, 31-33, 35-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Yancey (US 2,794,617).

With regard to claim 1, Yancey discloses an apparatus for mobilizing drill cuttings in a well, comprising at least one vane (42), and at least two blades (see Exhibit A,

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attached to this Office Action) defining at least one fluid conduit (54) between adjacent blades, the blades and vane being rotatable relative to one another (column 3, lines 41-50).

With regard to claim 2, the blades are configured to create a pressure difference in a fluid flowing through the at least one fluid conduit.

With regard to claim 3, Yancey discloses a sleeve adapted to fit over a drill string in the well (see Exhibit A).

With regard to claim 4, the vanes are located on the sleeve (see Exhibit A).

With regard to claim 5, the blades project farther than the vanes (see Exhibit A).

With regard to claim 6, the blades are mounted on a bushing (see Exhibit A) which is rotatably mounted on the sleeve, in the sense that it abuts the lower end of the sleeve.

With regard to claim 7, the blades are parallel to the axis of rotation.

With regard to claim 10, Yancey discloses a fixing device (38) for attaching the sleeve to the drill string.

With regard to claim 13, Yancey teaches that the vanes (42) rotate with the drill string (column 3, lines 41-50).

With regard to claim 14, the vanes are part of a turbine which creates thrust.

With regard to claim 15, the blades appear to have at least one axis of asymmetry.

With regard to claim 20, the bushing (see Exhibit A) is rigid.

With regard to claim 21, the sleeve is annular and accommodates a tubular (24).

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With regard to claim 22, the vanes are integral with the annular sleeve.

With regard to claim 24, the blades are integrally formed with the bushing.

With regard to claim 26, the sleeve has an axis of rotation and the vanes are parallel to it.

With regard to claim 27, the vanes appear to form a scoop (see Figure 5).

With regard to claim 28, the vanes form at least part of a sinusoidal shape (see Figure 5).

With regard to claim 29, one end of the vane is circumferentially spaced from the other end because of the curvature of the vanes seen in Figure 5.

With regard to claims 31 and 32, the upper surface of each vane is concave, and the upper surface faces the direction of rotation.

With regard to claim 33, the upper end of each vane has a greater radius of curvature than the lower end.

With regard to claim 35, Yancey discloses a drill cuttings agitation assembly, comprising a tubular (24), at least one vane (42), and least two blades (see Exhibit A) defining at least one fluid conduit between adjacent blades, wherein the at least one vane and the blades are rotatable relative to one another (column 3, lines 41-50).

With regard to claim 36, Yancey discloses a method of agitating drill fluid in an oil or gas well, the method comprising passing the drill fluid past at least one vane (42) rotatable relative to at least two blades (see Exhibit A).

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With regard to claim 37, Yancey teaches configuring the blades to create a pressure difference in fluid flowing through at least one fluid conduit defined by two at least two blades (column 3, lines 50-65).

With regard to claim 38, Yancey teaches providing the vane (42) on a sleeve (see Exhibit A).

With regard to claim 39, the blades are provided on a bushing (see Exhibit A) which is rotatably mounted with respect to the sleeve, since it abuts the lower end of the sleeve and rotates relative to it.

With regard to claims 40 and 41, the vanes are fixed to the drill string, and rotate with the drill string (column 3, lines 40-51).

With regard to claim 42, the blades also centralize the drill string (column 3, lines 40-51).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. Claims 8, 9, 16-19, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yancey in view of Zublin (US 2,005,767).

With regard to claims 8, 9, and 30, Yancey fails to disclose the blades also being offset so that they extend helically around the bushing, nor does Yancey disclose the angles of the vanes being opposite to that of the blades.

Zublin discloses an agitating assembly (see Figure 11) which comprises relatively rotating vanes and blades which are axially offset and angled in opposite directions.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Yancey to have included axially offset blades angled in a direction opposite to that of the vanes, as Zublin states that this configuration allows the agitator to "abruptly change the direction of the upwardly moving oil stream as the stream strikes these successive vanes [and blades]" thus enhancing the suspension of drill cuttings within the oil (page 5, column 2, lines 40-43). Furthermore, though Zublin appears to disclose an angle greater than 3-10 degrees, it would have been considered obvious to dispose the blades at whatever angle was necessary, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With regard to claims 16 and 18, in the combination of Yancey and Zublin, the blades (135) are shaped like foils, so that the fluid conduits defined between adjacent

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blades on the bushing change in profile between a first end proximal to the drill bit and a second end distal from the drill bit, and the blades appear to have an hourglass shape.

With regard to claims 17 and 19, in the combination of Yancey and Zublin, Zublin's fluid conduits are narrower at the proximal end and appear to become narrow again at the distal end. Also, the blades appear to simply have a constant width from root to tip. However, it would have been considered obvious to have provided blades of the claimed shape, as opposed to the shapes shown by Yancey in view of Zublin, since it has been held that a change in the shape of a prior art device is a design consideration within the level of ordinary skill in the art. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

9. Claims 11, 12, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yancey.

With regard to claims 11 and 12, Yancey discloses a key (38) for attachment between the sleeve (36) and the drill string, however, Yancey is silent as to other possible connection methods.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have connected the sleeve of Yancey using an annular clamp, as opposed to a key, because examiner hereby takes Official Notice of the functional equivalence of keys and clamps for attaching elements to rotating shafts. See US 6,880,648 to Edsger, column 8, lines 28-32 for evidence.

With regard to claims 23 and 25, Yancey shows both the vanes and blades being integral with the sleeve and the bushing, respectively.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have made the vanes and blades of Yancey separable and modular, rather than integral, to increase the ease of repair of the device, and because it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

10. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yancey in view of Shizawa (JP62101149).

Yancey fails to disclose the blades comprising a notch.

Shizawa discloses a mixing/agitating device having a blade (14) comprising multiple notches (13).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided the blades of Yancey with notches, as Shizawa states that "turbulences and divisions are generated by the flow caused by respective notches and blades...to mix and agitate the fluids more effectively" (see Abstract).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references provide further examples of drill string-mounted cuttings agitators.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. FULLER whose telephone number is

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(571)272-0419. The examiner can normally be reached on Monday thru Friday from 8:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer H. Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shane Bomar/
Primary Examiner, Art Unit 3676

03/18/2009
REF